

Docket No.: 4100-0120P  
(PATENT)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Patent Application of:  
Jurgen LAUTERJUNG et al.

Application No.: 09/701,782

Confirmation No.: 8137

Filed: January 25, 2001

Art Unit: 2637

For: A PROCESS FOR PROCESSING OFDM-  
SIGNALS RECEIVED SIMULTANEOUSLY  
BY A MULTI-ANTENNA SYSTEM

Examiner: E. M. Chang

**INFORMATION DISCLOSURE STATEMENT**  
**(SUBMISSION AFTER FILING OF AN APPLICATION BUT BEFORE FINAL**  
**REJECTION OR NOTICE OF ALLOWANCE OR CONCURRENTLY WITH A RULE**  
**1.114 RCE APPLICATION)**

MS Amendment  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, applicant(s) hereby submit(s) an Information Disclosure Statement for consideration by the Examiner.

I. LIST OF PATENTS, PUBLICATIONS OR OTHER INFORMATION

The patents, publications, or other information submitted for consideration by the Office are listed on the PTO-SB08(s), attached hereto.

II. COPIES

08/22/2005 JADD01 00000089 09701782

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- ☒ a. Copies of cited U.S. patents and patent application publications are not included.  
Copies of foreign patent documents and non-patent literature are included.

☐ b. Some or all of the documents listed on the PTO-SB08 are not enclosed because they were cited in the International Search Report and copies should already be in the PTO file. If copies are needed, please contact the undersigned.

☐ c. REFERENCES PREVIOUSLY CITED OR SUBMITTED - Pursuant to 37 C.F.R. §1.98(d), consideration of information listed on the PTO-SB08 form(s) is requested since any patents, publications, or other information which are listed on the PTO-SB08 form(s) but for which copies are not enclosed herewith, were previously cited by or submitted to the PTO in one of the following applications which has been relied upon for an earlier filing date under 35 U.S.C. § 120:

U.S. Appl. No(s) and U.S. Filing Date

@@@ filed @@@

III. CONCISE EXPLANATION OF THE RELEVANCE

(check at least one box)

☒ a. DOCUMENTS IN THE ENGLISH LANGUAGE - The patents, publications, or other information listed on the attached PTO SB08 are in the English language and therefore, do not require a statement of relevancy.

☐ b. DOCUMENTS NOT IN THE ENGLISH LANGUAGE - A concise explanation of the relevance of all patents, publications, or other information listed that is not in the English language is as follows:

☐ c. ENGLISH LANGUAGE SEARCH REPORT - An English language version of the search report or action that indicates the degree of relevance found by the foreign office is attached, thereby satisfying the requirement for a concise explanation. See MPEP 609(III)(A)(3).

☐ d. OTHER - The following additional information is provided for the Examiner's consideration.

IV. FEES (check one box)

☐ a. This Information Disclosure Statement is being filed concurrently with the filing of a new patent application; therefore, no fee is required.

☐ b. This Information Disclosure Statement is being filed concurrent with the filing of a continuation-in-part, continuation, or divisional patent application; therefore, no fee is required.

☐ c. This Information Disclosure Statement is being filed within three months of the filing date of a national application (37 C.F.R. § 1.97(b)(1)). No fee or statement is required.  
*(This section is not to be used with RCE's.)*

☐ d. This Information Disclosure Statement is being filed within three months of the date of entry of the national stage as set forth in § 1.491 in an international application (37 C.F.R. § 1.97(b)(2)). No fee or statement is required.

☐ e. This Information Disclosure Statement is being filed concurrently with the filing of a Request for Continued Examination under § 1.114 (37 C.F.R. § 1.97(b)(4)). No fee or statement is required.

☐ f. This Information Disclosure Statement is being filed before the mailing date of a first Action on the merits (37 C.F.R. § 1.97(b)(3)). No fee or statement is required. In the event that a first Office Action on the merits has been issued, please consider this IDS under 37 C.F.R. § 1.97(c) and see the statement under 37 C.F.R. § 1.97(e) below, or, if no statement has been made, charge our deposit account for the fee as required by 37 C.F.R. § 1.17(p).

☒ g. This Information Disclosure Statement is being filed before the mailing date of a Final Office Action under 37 C.F.R. § 1.113 (See 37 C.F.R. § 1.97(c)(1)) or before the mailing date of a Notice of Allowance under 37 C.F.R. § 1.311 (See 37 C.F.R. § 1.97(c)(2)).

☒ No statement; therefore, a fee as required by 37 C.F.R. § 1.17(p) is attached.

or

☐ See the statement below. No fee is required.

V. STATEMENT UNDER 37 C.F.R. § 1.97(e)

(check only one box)

The undersigned hereby states that:

☐ a. **Each item of information contained in the IDS was first cited in any communication from a foreign Patent Office in a counterpart foreign application not more than 30 days prior to the filing of this IDS; or**

☐ b. Each item of information contained in the IDS was first cited in any communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS; or

☐ c. No item of information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of IDS was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of the IDS.

☐ d. Some of the items of information were cited in a communication from a foreign Patent Office. As to this information, the undersigned states that each item of information contained in the IDS was first cited in a communication from a foreign Patent Office in a counterpart foreign application not more than three months prior to the filing of this IDS. As to the remaining information, the undersigned hereby states that no item of this remaining information contained in the IDS was cited in a communication from a foreign Patent Office in a counterpart foreign application and, to the best of my knowledge after making reasonable inquiry, was known to any individual designated in 37 C.F.R. § 1.56(c) more than three months prior to the filing of this statement.

VI. PAYMENT OF FEES (check one box)

☒ The required fee is listed on the attached Fee Transmittal.

☐ No fee is required.

If the Examiner has any questions concerning this IDS, he/she is requested to contact the undersigned. If it is determined that this IDS has been filed under the wrong rule, the PTO is requested to consider this IDS under the proper rule and charge the appropriate fee to Deposit Account No. 02-2448.

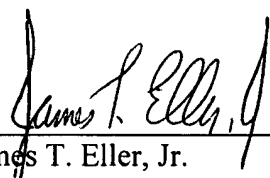
Application No.: 09/701,782

Docket No.: 4100-0120P

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to our Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. § 1.16 or under § 1.17; particularly, extension of time fees.

Dated: AUG 19 2005

Respectfully submitted,

By 

James T. Eller, Jr.

Registration No.: 39,538

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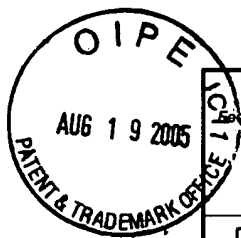
(703) 205-8000

Attorney for Applicant

Attachment(s):

*gld*

- ☒ PTO-SB08
- ☒ Documents
- ☐ Foreign Search Report
- ☒ Fee
- ☐ Other:



7/22/01  
\$2637

<b>Effective on 12/08/2004.</b> Pursuant to the Consolidated Appropriations Act, 2005 (H.R. 4818).		<b>Complete if Known</b>	
<b>FEE TRANSMITTAL</b> <b>For FY 2005</b>		Application Number	09/701,782-Conf. #8137
		Filing Date	January 25, 2001
		First Named Inventor	Jurgen LAUTERJUNG
		Examiner Name	E. M. Chang
		Art Unit	2637
<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27		Attorney Docket No.	4100-0120P
<b>TOTAL AMOUNT OF PAYMENT</b>		<b>(\$)</b>	<b>180.00</b>

<b>METHOD OF PAYMENT</b> (check all that apply)	
<input checked="" type="checkbox"/> Check	<input type="checkbox"/> Credit Card
<input type="checkbox"/> Money Order	<input type="checkbox"/> None
<input type="checkbox"/> Other (please identify): _____	
<input type="checkbox"/> Deposit Account	Deposit Account Number: <u>02-2448</u> Deposit Account Name: <u>Birch, Stewart, Kolasch &amp; Birch, LLP</u>
For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)	
<input type="checkbox"/> Charge fee(s) indicated below	<input type="checkbox"/> Charge fee(s) indicated below, except for the filing fee
<input checked="" type="checkbox"/> Charge any additional fee(s) or underpayment of fee(s) under 37 CFR 1.16 and 1.17	<input checked="" type="checkbox"/> Credit any overpayments

<b>FEE CALCULATION</b>							
<b>1. BASIC FILING, SEARCH, AND EXAMINATION FEES</b>							
	<b>FILING FEES</b>		<b>SEARCH FEES</b>		<b>EXAMINATION FEES</b>		
		<b>Small Entity</b>		<b>Small Entity</b>		<b>Small Entity</b>	
<b>Application Type</b>	<b>Fee (\$)</b>	<b>Fee (\$)</b>	<b>Fee (\$)</b>	<b>Fee (\$)</b>	<b>Fee (\$)</b>	<b>Fee (\$)</b>	<b>Fees Paid (\$)</b>
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	
<b>2. EXCESS CLAIM FEES</b>							
						<b>Small Entity</b>	
						<b>Fee (\$)</b>	<b>Fee (\$)</b>
Each claim over 20 (including Reissues)						50	25
Each independent claim over 3 (including Reissues)						200	100
Multiple dependent claims						360	180
<b>Total Claims</b>		<b>Extra Claims</b>	<b>Fee (\$)</b>	<b>Fee Paid (\$)</b>	<b>Multiple Dependent Claims</b>		
_____ - 20 = _____		x _____	= _____		<b>Fee (\$)</b>	<b>Fee Paid (\$)</b>	
<b>Indep. Claims</b>		<b>Extra Claims</b>	<b>Fee (\$)</b>	<b>Fee Paid (\$)</b>			
_____ - 3 = _____		x _____	= _____				
<b>3. APPLICATION SIZE FEE</b>							
If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).							
<b>Total Sheets</b>	<b>Extra Sheets</b>	<b>Number of each additional 50 or fraction thereof</b>		<b>Fee (\$)</b>	<b>Fee Paid (\$)</b>		
_____ - 100 = _____	/50	_____ (round up to a whole number) x _____		= _____			
<b>4. OTHER FEE(S)</b>							
Non-English Specification, \$130 fee (no small entity discount)						<b>Fees Paid (\$)</b>	
Other (e.g., late filing surcharge): <u>1806 Submission of an Information Disclosure Statement</u>						<u>180.00</u>	

<b>SUBMITTED BY</b>			
Signature	<u>James T. Eller, Jr.</u>	Registration No. (Attorney/Agent)	39,538
Name (Print/Type)	James T. Eller, Jr.	Telephone	(703) 205-8000
		Date	



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/B/PTO  <b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  <i>(Use as many sheets as necessary)</i>			<b>Complete if Known</b>		
			Application Number	09/701,782-Conf. #8137	
			Filing Date	January 25, 2001	
			First Named Inventor	Jurgen LAUTERJUNG	
			Art Unit	2637	
			Examiner Name	E. M. Chang	
Sheet	1	of	2	Attorney Docket Number	4100-0120P

U.S. PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Document Number Number-Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
	AA*	US-5,761,613	06-02-1998	Saunders et al.	

FOREIGN PATENT DOCUMENTS						
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> -Number <sup>4</sup> -Kind Code <sup>5</sup> (if known)	MM-DD-YYYY			
	BA	EP-0 600 547 A1	06-08-1994			
	BB	EP-0 600 547 B1	02-09-2000			
	BC	WO-91/20142	12-26-1991			

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. \* CITE NO.: Those application(s) which are marked with an single asterisk (\*) next to the Cite No. are not supplied (under 37 CFR 1.98(a)(2)(iii)) because that application was filed after June 30, 2003 or is available in the IFW. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

NON PATENT LITERATURE DOCUMENTS					T <sup>2</sup>
Examiner Initials	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.			
	CA	Wilson et al., "16 QAM Modulation with Orthogonal Frequency Division Multiplexing in a Rayleigh-Fading Environment", XP 997704, pp.1660-1664			
	CB	Masahiro, Hitoshi and Richard, NTT and Lucent, doc:IEEE 802.11-98/193 (May 1998)			
	CC	Bulumulla et al., "An Adaptive Diversity Receiver for OFDM in Fading Channels", Department of Electrical Engineering, University of Pennsylvania, IEEE, pp.1325-1329 (1998)			
	CD	Cimini, Jr., et al., "OFDM with Diversity and Coding for Advanced Cellular Internet Services", AT&T Labs - Research, IEEE, pp.305-309 (1997)			
	CE	European Standard (Telecommunications Series), "digital Video Broadcassting (DVB); Framing structure, channel coding and modulation for digital terrestrial television", EN 300 744 V1.1.2 (1997-08)			
	CF	McGibney et al., "Implementation of a High Performance Wireless LAN", pp.645-650, IEEE			
	CG	Tufvesson et al., "Pilot Assisted Channel Estimation for OFDM in Mobile Cellular Systems", Department of Applied Electronics, Lund University VTC '97			
	CH	Proakis, Digital Communications, Third Edition, "Diversity Techniques for Fading Multipath Channels", pp.777-781 (1995)			
	CI	Gibson, The Mobile Communications Handbook", IEEE Press, pp.172-173			
	CJ	Microwave Mobile Communications, Chapters 5 and 6, edited by William C. Jakes (1974)			
	CK	Proceedings of the IRE, pp.1074-1103			
	CL	Sawahashi et al., Electronic Letters, Vol. 32, No. 6, pp.522-523 (March 14, 1996)			
	CM	Baum et al., "A Comparison of Differential and Coherent Reception for a Coded OFDM System in a Low C/I Environment", IEEE, pp.300-304 (1997)			
	CN	Kim, "Coding Strategies for OFDM with Antenna Diversity for High-Bit-Rate Mobile Data Applications", VTC '98, pp.763-767 (1998)			
	CO	Lamarca, "Multichannel Receivers for OFDM and TDMA in Mobile Communications", IEEE, pp.3865-3868 (1997)			

Examiner Signature		Date Considered	
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Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Substitute for form 1449A/B/PTO			<b>Complete if Known</b>	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>  (Use as many sheets as necessary)			Application Number	09/701,782-Conf. #8137
			Filing Date	January 25, 2001
			First Named Inventor	Jurgen LAUTERJUNG
			Art Unit	2637
			Examiner Name	E. M. Chang
			Attorney Docket Number	4100-0120P
Sheet	2	of	2	

CP	Casas et al., "OFDM for Data Communication Over Mobile Radio FM Channels - Part II: Performance Improvement", IEEE Transactions on Communications, Vol. 40, No. 4, pp.680-683 (April 1992)	
CQ	Kim et al., BER Analysis of QAM with MRC Space Diversity in Rayleigh Fading Channel", IEEE, pp.482-485 (1995)	
CR	Eng et al., "Comparison of Diversity Combining Techniques for Rayleigh-Fading Channels", IEEE Transactions on Communications, Vol. 44, No. 9, pp.1117-1129 (September 1996)	
CS	Sunaga et al., "Performance of Multi-Level QAM with Post-Detection Maximal Radio Combining Space Diversity for Digital Land-Mobile Radio Communication", IEEE Transactions on Vehicular Technology, Vol. 42, No. 3, pp.294-301 (August 1993)	
CT	Sampei et al., "Rayleigh Fading Compensation for QAM in Land Mobile Radio Communications", IEEE Transactions on Vehicular Technology, Vol. 42, No. 2, pp.137-147 (May 1993)	
CU	Sampei et al., "Rayleigh Fading Compensation Method for 16QAM in Digital Land Mobile Radio Channels", IEEE, pp.640-646 (1989)	
CV	Cimini, Jr., "Analysis and Simulation of a Digital Mobile Channel Using Orthogonal Frequency Division Multiplexing", IEEE Transactions on Communications, Vol. COM.33, No. 7, pp.665-675 (July 1985)	
CW	Kalet, "A Multitone-Antenna Diversity Approach to PCS Communications", pp.473-476 (1996)	
CX	Ulrich Reimers, Digitale Fernsehtechnik, Datenkompression und Übertragung für DVB, 2., vollständig überarbeitete Auflage, Mit 175 Abbildungen	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>Applicant is to place a check mark here if English language Translation is attached.

Examiner Signature		Date Considered	
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